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Page 1 of: 25

Attention: MAIL STOP APPEAL BRIEF
Group Art Unit 2835
Examiner Michael Rutland Wallis

From: SMART & BIGGAR

Your file no.: 10/725,526

Date: January 29, 2007

Reply to Ottawa file no.: 79115-26 /jas

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TRANSMITTAL OF APPEAL BRIEF (Small Entity)	Docket No. 79115-26 /jas

In Re Application Of: **RAYMOND K. ORR, ET AL.**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/725,526	December 3, 2003	Michael Rutland Wallis	07380	2835	3205

Invention: **DISTRIBUTED POWER SUPPLY ARRANGEMENT**

COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on:

November 27, 2006

☒ Applicant claims small entity status. See 37 CFR 1.27

The fee for filing this Appeal Brief is: **$250.00**

☐ A check in the amount of the fee is enclosed.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

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Dated: **January 29, 2007**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS

In re application of Raymond K. Orr et al. Serial No.: 10/725,526 Filed: December 3, 2003 For: DISTRIBUTED POWER SUPPLY ARRANGEMENT	Group Art Unit: 2835 Examiner: Rutland Wallis, Michael Attorney Docket No.: 79115-26

APPELLANT'S BRIEF UNDER 37 C.F.R. 1.192

The Assistant Commissioner of Patents
Washington, D.C. 20231
U.S.A.

Dear Sir or Madam:

This is an appeal from the decision of the Primary Examiner, in a final action dated August 29, 2006 and in an advisory action dated November 8, 2006, finally rejecting claims 1 to 7, 9 to 11, 13 to 17, and 19 of this application. The fee of $250 required by C.F.R. 1.17(c) is enclosed.

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Real Party in Interest

The real party in interest is Potentia Semiconductor Corporation of Kanata, Ontario, Canada, to whom the inventors are under an obligation to assign the application.

Related Appeals and Interferences

None.

Status of Claims

The status of the claims of this application is as follows:

Claims 1 to 7	Rejected	Appealed herein
Claim 8	Cancelled	
Claims 9 to 11	Rejected	Appealed herein
Claim 12	Cancelled	
Claims 13 to 17	Rejected	Appealed herein
Claim 18	Cancelled	
Claim 19	Rejected	Appealed herein.

Status of Amendments

In a reply filed October 23, 2006 subsequent to the final action, clarifying amendments were proposed in claims 1 to 3, 9, 10, 15, and 19.

According to the advisory action, these amendments have not been entered, because they allegedly "raise new issues that would require further consideration and/or search". The claims in the Appendix do not incorporate the proposed amendments.

Summary of Claimed Subject Matter

Independent claim 1 is directed to a distributed power supply arrangement in which a plurality of power sources PS0 to PS4 (Fig. 3) or 26 (Figs. 4) are connected to a plurality of loads IC0 to IC4 (Fig. 3) or 24 (Fig. 4) via a power distribution network 20 and 22, whereby the power sources are connected to the loads via respective resistances R00 to R44 (Fig. 3) of the power distribution network, as described in the specification at page 12, line 10 to 25. As further described at page 13, lines 4 to 25, voltage is sensed at at least one point 28 (Fig. 4) in the power distribution network, and each of the power sources PS0 to PS4 or 26 is responsive to the sensed voltage for supplying a regulated current (the power sources PS0 to PS4 and 26 are shown as current sources) or a regulated power to the power distribution network.

Independent claim 9 is directed to a method of regulating voltage in a power distribution network 20, 22 (Fig. 4) including a plurality of power sources PS0 to PS4 or 26 (Fig. 3 or 4) for supplying power to a plurality of loads IC0 to IC4 or 24, also as described at page 12, line 10 to page 13, line 25, and comprising sensing voltage at at least one point 28 in the power distribution network and regulating currents supplied by the plurality of power sources to the power distribution network in dependence upon the sensed voltage, the power sources 24 being current sources controlled by the sensed voltage as described at page 13, lines 22 to 25.

The step ofsensing voltage at at least one point in the power distribution network recited in claim 9 is described in the specification at page 13, lines 18 to 25. This is represented in Fig. 4 of the drawings by the point 28 at which voltage is sensed in the power distribution network represented by the buses 20 and 22, together with connection lines 30 and voltage sense inputs of the current sources 26. The step of regulating currents supplied by the plurality of power sources to the power distribution network in dependence upon the sensed voltage recited in claim 9 is described in the specification at page 13, lines 22 to 25, the power sources being constituted by the current sources 26 as shown in Fig. 4, these sources 26 supplying regulated currents via their outputs to the power distribution network represented by the buses 20 and 22.

Independent claim 15 is directed to a power supply arrangement, for example as described at page 12, line 10 to page 13, line 25, comprising a plurality of power sources PS0 to PS4 or 26 (Fig. 3 or 4) each arranged for supplying power via a power distribution network 20, 22 to each of a plurality of loads IC0 to IC4 or 24, and at least one sensor for sensing a parameter, for example voltage sensing at a point 28 in the power distribution network as described at page 13, lines 18 to 22, of the arrangement for regulating the power supplied to the power distribution network from the plurality of power sources. The power sources 26 are controlled by the sensed voltage as a feedback control signal as described at page 13, lines 22 to 25.

Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection presented for review are as follows:

(i) whether claims 1, 2, 4, 9, 15, 16, 17, and 19 are anticipated under 35 U.S.C. §102(b) by Rock U.S. Patent No. 6,121,693;

(ii) whether claims 3, 5, 10, and 11 are unpatentable under 35 U.S.C. §103(a) over Rock U.S. Patent No. 6,121,693 in view of Murabayashi et al. U.S. Patent No. 6,856,047;

(iii) whether claims 6, 7, 13, and 14 are unpatentable under 35 U.S.C. §103(a) over Rock U.S. Patent No. 6,121,693 in view of Hayward et al. U.S. Patent No. 6,317,345.

Ground (i) - whether claims 1, 2, 4, 9, 15, 16, 17, and 19 are anticipated under 35 U.S.C. §102(b) by Rock U.S. Patent No. 6,121,693.

It is well accepted that, for rejection of any claim under 35 U.S.C. §102, all of the features of the claim must be disclosed by the applied reference. As discussed below with respect to the specific claims and claim groupings of the present application, features of the present invention as claimed are not all disclosed by the applied reference.

Claims 1 and 2

Claim 1 recites a distributed power supply arrangement comprising, in part:

> "at least one voltage sensor for sensing voltage at at least one point in the power distribution network".

This feature of the present invention as claimed in claim 1 is not disclosed by Rock.

In this respect the final action contends that Rock teaches

> "at least one voltage sensor (item 62a-c supply isolators monitor for a threshold voltage see for example claim 5 in column 6 lines 60-65) for sensing voltage at least one point in the power distribution network".

This contention is not correct.

In fact, the relevant part of claim 5 at column 6, lines 60-65 of Rock discloses a supply isolator comprising:

> "a supply current measurement converting current in said supply into a measurement voltage;
> a comparator comparing said measurement voltage to a threshold voltage, said comparator ..."

It is clear from this wording that the measurement voltage disclosed by Rock represents "current in said supply" and is "a supply current measurement". It is a current sensor, not a voltage sensor as recited in claim 1 of this application. Further, it is not "for sensing voltage at at least one point in the power distribution network" as recited in claim

1. The measurement voltage disclosed by Rock is not a voltage at any point in the power distribution network, and does not represent a voltage at at least one point in the power distribution network.

There is nothing disclosed by Rock for sensing a voltage at any point in the power distribution network via which power is supplied from the power sources to the loads, as required by claim 1.

It is observed in this respect that the relevant description in Rock at column 5, line 31 to column 6, line 10, and Figs. 4 and 5 of Rock's drawings, further make it entirely clear that Rock monitors current, and does not monitor voltage. See for example the words "CURRENT MEASUREMENT" in Fig. 4, the current curve 110 in Fig. 5, column 5 lines 36 to 38 reciting that "current shunt 100a produces a voltage proportional to load current I1", "proportional to the load current" in lines 41 to 44, "measurement of current" in line 59, and "output current" in column 6, line 5. Rock monitors current, not voltage as required by claim 1.

Claim 1 further recites that:

> "each of the power sources is responsive to the sensed voltage for supplying a regulated current or a regulated power to the power distribution network".

This feature of the present invention is also not disclosed by Rock.

Firstly, there is no such sensed voltage in Rock as discussed above. Further, in Rock the power sources are not responsive to any sensed voltage "for supplying a regulated current or a regulated power" to the power distribution network.

More particularly, Rock does not disclose any power source for supplying a regulated current or a regulated power. Rock's power supplies 62a-c, 72a-c, and 82a-c, producing power supply voltages V1 etc., are not described as supplying, and clearly do not supply, either a regulated current or a regulated power.

This is clear not only from the general description and nature of Rock, but also in particular his Fig. 5 which clearly shows that current and power are not regulated by Rock.

More particularly, Fig. 5 of Rock shows power supply output current versus time, with the current rising as shown by the curve 110 up to a maximum limit at which the power to the output load is disabled, this being a fault or error situation (see e.g. "faulty load" in column 5, line 48 and "reporting of errors" at column 5, line 52). It is clear from the curve 110 that the current produced by each power supply in Rock is not regulated. As power is equal to voltage multiplied by current, and there is no disclosure in Rock of any change in power supply voltage, it follows that Rock also does not disclose any power supply for supplying a regulated power.

The final action contends with respect to "regulation" that:

> "The office respectively notes claims are given the broadest reasonable interpretation consistent with the specification however limitations in the specification are not read into the claims. ... An attached *Merriam-Webster's Dictionary* definition defines "regulate" as to fix or adjust the time, amount, degree or rate of. As applied in the rejection Rock adjusts the amount. Therefore the limitation regulate is properly anticipated by Rock.".

The last two sentences of this contention are incomplete and incorrect.

More particularly, the sentence "As applied in the rejection Rock adjusts the amount." fails to state <u>of what</u> Rock allegedly adjusts the amount. Rock does not disclose adjusting the amount of anything. The final action does not state where in Rock there is any disclosure of regulating or adjusting the amount of anything.

More specifically, the final action does not state where in Rock there is any disclosure of power sources controlled by a sensed voltage for supplying a regulated current or a regulated power to the power distribution network, as recited in claim 1.

The final action does allege that:

> "Rock teaches the power sources comprise regulated current sources, as the supply isolators regulate the current and the supplies of Rock are output a regulated current to supply the shared loads in order to compensate for power droop".

Rock refers to droop only in the context of his acknowledged prior art. Likewise, he only refers to regulation with respect to his acknowledged prior art. Rock does not disclose any regulated current sources. The contention that Rock teaches that the power

sources comprise regulated current sources, and the contention that the power supplies of Rock output regulated currents, are completely unsupported by the disclosure of Rock.

The statement "the supply isolators regulate the current" is not correct. As shown by Fig. 5 of Rock as discussed above, there is no current regulation disclosed by Rock.

With respect to the dictionary definition of "regulate", it is observed that it is well accepted that the specification, including the claims, is directed to a person of ordinary skill in the art to which the invention relates, having a mind willing to understand. Such a person would have no difficulty in fully understanding the passage in claim 1 reciting that "each of the power sources is responsive to the sensed voltage for supplying a regulated current or a regulated power to the power distribution network". Further, such a person would have no difficulty in recognizing that this is clearly not disclosed by Rock.

More particularly, Rock's isolators are clearly described as not regulating the current, as shown in Fig. 5, but as disabling the output power in the event that the monitored current exceeds the maximum limit represented by the threshold voltage (Fig. 5 and column 6, lines 4 to 10). A person of ordinary skill in the art would clearly understand that Rock's disabling of power output is not "supplying a regulated current or a regulated power" within the meaning of claim 1. Such a person is familiar with both regulation (for example, see Rock column 1, line 47 and column 2, line 28 referring to regulation in power supply arrangements of Rock's acknowledged prior art) and isolation in the event of a fault as described by Rock, and would have no difficulty in distinguishing between these.

Further, claim 1 clearly recites that the power sources are "for supplying a regulated current or a regulated power to the power distribution network". This is not disclosed by Rock, in which as disclosed the isolators either supply or, in the event of a fault causing an excessive current, do not supply an unregulated (see Fig. 5) current to the load. Rock's disabling of output power does not supply any current to a load, and clearly does not supply a regulated current or a regulated power as required by claim 1.

Consequently, Rock does not anticipate claims 1 and 2.

Claim 4

All of the arguments above in relation to claim 1 also apply for claim 4 in view of its dependency upon claim 1.

Claim 4 further recites specifically that "the power sources comprise regulated current sources". There is no disclosure in Rock of any regulated current sources, and there is no disclosure or suggestion in Rock of his power supplies being regulated current sources. On the contrary, Rock clearly discloses that his power supplies are not regulated current sources, because as shown in Fig. 5 their current output is not regulated, but can vary anywhere up to a maximum current limit, at which the power output is disabled because this represents a fault situation.

Disabling an output of a power supply in a fault situation as disclosed by Rock is not a disclosure of regulating the current output of a power source as required by claim 4.

Consequently, Rock does not anticipate claim 4.

Claim 9

Claim 9 recites a method of regulating voltage in a power distribution network including a plurality of power sources for supplying power to a plurality of loads, comprising the steps of:

> "sensing voltage at at least one point in the power distribution network; and
> regulating currents supplied by the plurality of power sources to the power distribution network in dependence upon the sensed voltage".

These steps of the present invention as claimed in claim 9 are not disclosed by Rock.

As discussed above in relation to claim 1, Rock does not disclose sensing voltage at any point in the power distribution network. Rock discloses monitoring current in the power distribution network, which is not the same. Rock's current monitoring does not sense voltage at at least one point in the power distribution network as recited in claim 9.

As also discussed above in relation to claims 1 and 4, Rock does not disclose any regulation of currents supplied by the plurality of power sources to the power distribution network. Rock's disabling of output power is not current regulation. Further, Rock's disabling of output power is not in dependence upon a voltage sensed at at least one point in the power distribution network as required by claim 9, as disclosed it is dependent only upon output current.

Consequently, Rock does not anticipate claim 9.

Claims 15 and 19

Claim 15 recites a power supply arrangement which comprises:

> "at least one sensor for sensing a parameter of the arrangement for regulating the power supplied to the power distribution network from the plurality of power sources".

This feature of the present invention as claimed in claim 15 is not disclosed by Rock.

Rock discloses current monitoring, but does not disclose any regulation of power supplied by the power supplies. On the contrary, Rock discloses in Fig. 5 that the output current can vary anywhere up to a maximum limit, and hence that the output power can vary anywhere up to a corresponding maximum limit, without any regulation. Rock's disabling output power at the maximum current limit is not "regulating the power supplied to the power distribution network" as recited in claim 15, it is disabling so that no power is supplied.

Consequently, Rock does not anticipate claims 15 and 19.

Claim 16

The arguments above in relation to claim 15 also apply for claim 16 in view of its dependency upon claim 15.

Claim 16 further recites specifically that "the power sources comprise regulated current sources". As discussed above in relation to claims 1 and 4, Rock does not

disclose any regulated current sources, does not disclose power supplies as regulated current sources, and specifically discloses that his power sources are not regulated current sources by illustrating by the curve 110 in Fig. 5 that the output current can be anywhere up to a maximum current limit. As discussed above, Rock's disabling of the power output at the maximum current limit is not regulating a current source as required by claim 16.

Consequently, Rock does not anticipate claim 16.

Claim 17

The arguments above in relation to claim 15 also apply for claim 17 in view of its dependency upon claim 15.

Claim 17 further recites specifically that "each sensor comprises a voltage sensor for sensing voltage at a respective point in the power distribution network". As discussed above in relation to claim 1, Rock does not disclose any voltage sensor for sensing voltage at any point in the power distribution network. Rock only discloses sensing current in his power distribution network.

Consequently, Rock does not anticipate claim 17.

Ground (ii) - whether claims 3, 5, 10, and 11 are unpatentable under 35 U.S.C. §103(a) over Rock U.S. Patent No. 6,121,693 in view of Murabayashi et al. U.S. Patent No. 6,856,047.

Claim 3

The arguments above in relation to claims 1 and 2 with respect to Rock also apply for claim 3 in view of its dependency upon claim 2.

Murabayashi et al. does not add to Rock anything to detract from the arguments above relating to claims 1 and 2. Claim 3 is therefore not unpatentable over the combination of Rock and Murabayashi et al. for all of the same reasons given above that the invention of claims 1 and 2 is not anticipated by Rock.

Claim 5

The arguments above in relation to claim 4 with respect to Rock also apply for claim 5 in view of its dependency upon claim 4.

Murabayashi et al. does not add to Rock anything to detract from the arguments above relating to claim 4. Claim 5 is therefore not unpatentable over the combination of Rock and Murabayashi et al. for all of the same reasons given above that the invention of claim 4 is not anticipated by Rock.

Claims 10 and 11

The arguments above in relation to claim 9 with respect to Rock also apply for claims 10 and 11 in view of their dependency upon claim 9.

Murabayashi et al. does not add to Rock anything to detract from the arguments above relating to claim 9. Claims 10 and 11 are therefore not unpatentable over the combination of Rock and Murabayashi et al. for all of the same reasons given above that the invention of claim 9 is not anticipated by Rock.

Ground (iii) - whether claims 6, 7, 13, and 14 are unpatentable under 35 U.S.C. §103(a) over Rock U.S. Patent No. 6,121,693 in view of Hayward et al. U.S. Patent No. 6,317,345.

Claims 6 and 7

The arguments above in relation to claims 1 and 2 with respect to Rock also apply for claims 6 and 7 in view of its dependency upon claim 2.

Hayward et al. does not add to Rock anything to detract from the arguments above relating to claims 1 and 2. Claims 6 and 7 are therefore not unpatentable over the combination of Rock and Hayward et al. for all of the same reasons given above that the invention of claims 1 and 2 is not anticipated by Rock.

Claims 13 and 14

The arguments above in relation to claim 9 with respect to Rock also apply for claims 13 and 14 in view of their dependency upon claim 9.

Hayward et al. does not add to Rock anything to detract from the arguments above relating to claim 9. Claims 13 and 14 are therefore not unpatentable over the combination of Rock and Hayward et al. for all of the same reasons given above that the invention of claim 9 is not anticipated by Rock.

Respectfully submitted,

RAYMOND K. ORR

By _____
Elliott S. Simcoe
Reg. No. 50,010
Tel.: 613 232 2486 ext 280

Date: January 29, 2007

ESS/RJH/wfs

Claims Appendix

Claims 1 to 7, 9 to 11, 13 to 17, and 19 as appealed herein are as follows:

1. A distributed power supply arrangement comprising a plurality of power sources for supplying power to a plurality of loads via a power distribution network, the power sources and the loads being connected to the power distribution network whereby the power sources are coupled to the loads via respective resistances of the power distribution network, the arrangement further comprising at least one voltage sensor for sensing voltage at at least one point in the power distribution network, wherein each of the power sources is responsive to the sensed voltage for supplying a regulated current or a regulated power to the power distribution network.

2. An arrangement as claimed in claim 1 and comprising a plurality of said voltage sensors for sensing voltages at a plurality of points in the power distribution network.

3. An arrangement as claimed in claim 2 wherein each of the power sources is responsive to an average of the sensed voltages for supplying said regulated current or regulated power to the power distribution network.

4. An arrangement as claimed in claim 1 wherein the power sources comprise regulated current sources.

5. An arrangement as claimed in claim 4 wherein the power sources are arranged for supplying regulated currents with different relative weights to the power distribution network.

6. An arrangement as claimed in claim 1 wherein the power distribution network comprises power and ground planes of a circuit card on which the loads are provided.

7. An arrangement as claimed in claim 6 wherein the plurality of power sources are arranged on the circuit card.

9. A method of regulating voltage in a power distribution network including a plurality of power sources for supplying power to a plurality of loads, comprising the steps of:

sensing voltage at at least one point in the power distribution network; and

regulating currents supplied by the plurality of power sources to the power distribution network in dependence upon the sensed voltage.

10. A method as claimed in claim 9 wherein the voltage is sensed at a plurality of points in the power distribution network, and the currents supplied by the plurality of power sources are regulated in dependence upon an average of the sensed voltages.

11. A method as claimed in claim 10 wherein the currents supplied by the plurality of power sources are regulated to have different relative weights.

13. A method as claimed in claim 9 applied to a circuit card, wherein the loads comprise integrated circuits on the circuit card and the plurality of power sources comprise switch mode power converters on the circuit card.

14. A method as claimed in claim 13 wherein the power distribution network comprises power and ground planes of the circuit card.

15. A power supply arrangement comprising a plurality of power sources each arranged for supplying power via a power distribution network to each of a plurality of loads, and at least one sensor for sensing a parameter of the arrangement for regulating the power supplied to the power distribution network from the plurality of power sources.

16. A power supply arrangement as claimed in claim 15 wherein the power sources comprise regulated current sources.

17. A power supply arrangement as claimed in claim 15 wherein each sensor comprises a voltage sensor for sensing voltage at a respective point in the power distribution network.

19. A power supply arrangement as claimed in claim 15 and comprising a plurality of said sensors each for sensing said parameter at a respective one of a plurality of points in the power distribution network.

Evidence Appendix

None.

Related Proceedings Appendix

None.